DOCUMENT RESUME

ED 080 399 SO 005 682

AUTHOR	Risinger, C. Frederick; And Others
TITLE	The Dig: A Study in Archaeology. Profiles of Promise 6.
INSTITUTION	ERIC Clearinghouse for Social Studies/Social Science Education, Boulder, Colo.; Social Science Education Consortium, Inc., Boulder, Colo.
SPONS AGENCY	National Inst. of Education (DHEW), Washington, D.C.
PUB DATE	[73]
NOTE	4p.
AVAILABLE FROM	Social Science Education Consortium, 855 Broadway, Boulder, Colorado 80302 ($10.00, 1 copy of 30 issues; $20.00, 5 copies of 30 issues)
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Archaeology; Community Involvement; Cultural Education; *Culture; *Educational Innovation; Field Experience Programs; Interdisciplinary Approach; Language Arts; Mathematics; Sciences; Secondary Grades; Short Courses; *Simulation; *Social Studies; Student Projects; Team Teaching
IDENTIFIERS	*Glen Ellyn (Illinois) Junior High School; Profiles of Promise

ABSTRACT

The activity described in this profile is based on the simulation Dig. Although designed primarily for use by social studies classes, Dig was expanded by Glen Ellyn teachers to include language arts, mathematics, and science. The objectives of the one-month unit were to: 1) teach techniques and procedures of archaeologists; 2) introduce students to the work of archaeologists in Illinois; 3) encourage creativity in the development of cultures; 4) encourage cooperation in working with others; and, 5) meet people in different fields connected with archaeology. The teaching team wrote their own units for each of the four content areas. The unit began with a one-week introduction to each of the four phases of culture. The second week centered on several outside resources. The 133 students were then divided into four groups, each representing a different culture. Each group decided on themes for their culture and developed certain cultural universals. They created artifacts to fit these universals. Students finished their artifacts and prepared the burial pits during the third week. Each team developed and buried the artifacts of their own culture and excavated those of a different culture. The first days of the final week were spent analyzing the artifacts and forming hypotheses about the culture they represented. This was followed by a session in which each group presented the analysis of the culture it had excavated to the team that created the culture. The dig experience was concluded with field trips and a museum open house. Only $40 was spent on the project. (JLB)

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The Dig: A Study in Archaeology

"In planning the dig, we had two primary objectives that guided our thinking," said Julie Leach. "First, we wanted to develop activities that would both excite students and allow them to utilize their creative potential. Second, we wanted the students to realize that the world is not divided into language arts, and science, and math, but that these are merely tools to be used in examining reality."

The entire activity was based on the simulation Dig *(Interact Company, 1969). Although designed primarily for use by social studies classes,* Dig *was expanded by the Glen Ellyn teachers to include language arts, mathematics, and science. Cherie Child, 8th grade social studies teacher, enlisted the help of Julie Leach in language arts, Nellie Macdonald in math, and Jack Wong in science to plan a four-week unit. Each teacher focused on an aspect of their discipline as it applied to the concept of culture and to the possible artifacts of a culture one might find in an archaeological dig.*

The schedule of activities involved the development of each culture, including its mathematical system, its language, and its over-riding cultural universals; the creation of artifacts representing the various aspects of each culture; the actual burial of artifacts, followed by the dig; the analysis of the artifacts; and a museum open house where student-made artifacts and slides of the activity were presented for parents, teachers, and fellow students.

PLANNING THE PROJECT

The teaching team began planning in January 1972 for the one-month unit that was to begin the middle of April. They established the following objectives for the unit:

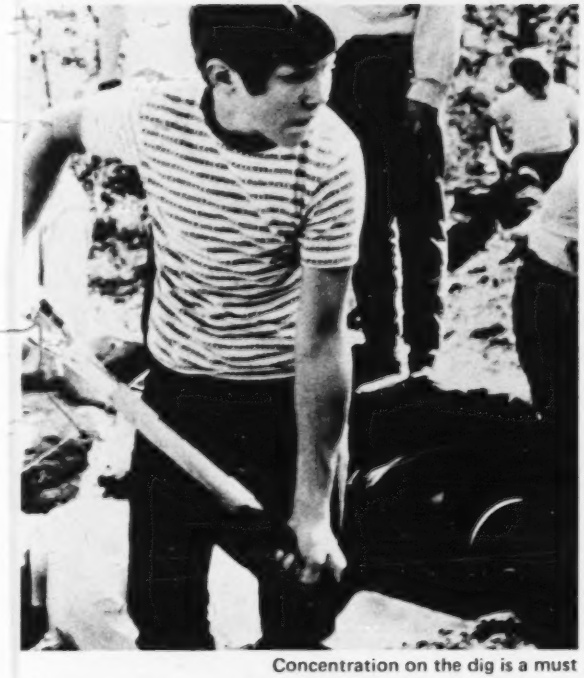
1. To teach basic techniques and procedures of archaeologists.
2. To introduce students to the work of archaeologists in Illinois, specifically the Koster Dig in Kampsville, Illinois.
3. To encourage creativity in the development of cultures.
4. To encourage cooperation and patience in working with other people.
5. To meet people in different professions and fields connected with archaeology.

Once the objectives were defined, the team began to design learning experiences to achieve each one. A problem was encountered in finding basic materials at the junior high school level, so they wrote their own units for each of the four content areas. They also developed a bibliography of materials available in their own school library. They identified movies and filmstrips, invited speakers, and planned field experiences for the students.

A major part of the planning entailed finding a site near the school where four burial pits could be dug. The developers of *Dig* recommend that the pits be near one another but not in sight of one another. The principal's cooperation was very helpful in this task. The Glen Ellyn team notes that the simulation is designed for use by one class of 30 students divided into two teams, and that they had four classes of 133 students divided into four teams. "Our principal was very open to the unit and helped us a great deal. Unless you have the cooperation of the administration, don't try this unit on the scale we did. Start small!" advises Leach.

Class time is used for making artifacts

The grid for the dig is carefully laid out



Concentration on the dig is a must

Students dig the pit for planting artifacts

When the units were planned and resources identified, materials were ordered. "We only spent about $40 on the entire project," Leach noted. The school library purchased the simulation *Dig*, which cost $10 and the student council donated $30 to purchase and develop film that student photographers used to record all the activities of the dig. The Instructional Material Center for the school district had on hand paint, brushes, plaster of paris, paper cups, and other items needed to make the artifacts. Students provided shovels, brushes, trowels, and other equipment needed for the dig.

One thing the team was unable to plan for was the weather. They just set the schedule and hoped for the best. "Fortunately, it didn't rain. We covered the pits with plastic just in case, but we were lucky. We were also a little worried about vandalism, but no one bothered the dig overnight."

THE SIMULATION

The four-week unit began with a one-week introduction to each of the four phases of culture that were to be studied. In mathematics, students were introduced to the historical development of number systems and to various number systems including those used by the Egyptians, Romans, Babylonians, Mayans, and Chinese. A geometric plan was worked out for burying the artifacts. The culminating activity was the development of a number system compatible with other aspects of their culture.

In social studies, students studied cultural differences, cultural change, and cultural universals. They were then asked to choose from a list three cultural universals they might be interested in developing for their culture. The list included the following: economics; food, clothing, shelter; family and kin; political organization; communications; arts and esthetics; recreation; and attitudes toward the unknown (religion and death).

The language arts classes explored the historical development of languages and various universals of language. They also learned about hieroglyphics and cryptography, since their culminating assignment was to prepare a Rosetta Stone with the language of their culture on it.

During the introductory period, the science classes were focused on primitive man and prehistoric animals so students could develop fossils and artifacts that were representative of primitive cultures if they wished to do so.

The second week centered on several outside resources. Judge Samuel A. Perry, a federal court judge, came in to speak about a fossil mastodon found on his property. Edward Dlugopolski, Chairman of the Art Department at Glenbard West High School, discussed the history of art and showed the students several samples of cave painting. Mildred Robson, social worker for the Glen Ellyn schools, set up a two-week display of early African tools and artifacts. "The speakers were a very important part of the program," Child said. "The students really became excited when they heard from people who had actually participated in an archaeological dig." The movies, "How We Learn About the Past" and "The Archaeologist and How He Works," were shown.

The 133 students were now divided into four groups, each representing a different culture. Each group decided on themes for their culture and made a final selection of the cultural universals they would develop. They began to create artifacts to fit the universals they had selected. Artifact blueprint sheets were distributed, on which students noted materials required for construction, any written messages to appear on the artifact, and a detailed explanation of how the artifact was a valid indication of the culture universal. Also included on the blueprint were front- and side-view drawings of the artifact by the student. The art teacher taught each culture student to use plaster of paris to make artifacts.

Students finished their artifacts in the beginning of the third week and prepared the pits for burial. Each team developed and buried the artifacts of their own culture and excavated the artifacts of a different culture. One day was spent in burying artifacts, and two days in digging them. Artifacts were carefully preserved during the dig. The first two days of the final week were spent analyzing the artifacts and forming hypotheses about the culture they represented. This was followed by a session in which each group presented the analysis of the culture it had excavated to the team that created the culture. Students received

immediate feedback on their hypotheses, since the various culture groups were happy to point out errors or support correct findings. The dig experience was concluded with field trips and a museum open house. The field trips included visits to Peabody Coal Mines at Braidwood, Illinois, to search for fossils; to the Oriental Museum at the University of Chicago to view exhibits of artifacts from pre-Egyptian cultures; and to an actual dig site in St. Charles, Illinois, with archaeologists from the College of DuPage, Glen Ellyn, Illinois.

At the museum open house, artifacts from each of the four cultures were displayed and slides taken during the activity were shown. Certificates of merit were presented to 20 students who had designed the most creative artifacts. Teachers, students, and parents who knew about the activity but were not part of it were glad to have the opportunity to see what all the excitement was about.

INVOLVING THE COMMUNITY

The teaching team notes that, with a project of this magnitude, everyone needs to be well informed. The cooperation of parents, administrators, and the school board is needed. Parents were informed about the dig by mail. The entire process was explained, and parents were notified that students would not be bringing home their regular textbooks and traditional assignments during the dig; however, they might ask to borrow a shovel or trowel from the family's garden tools! Parents were also asked if they would like to participate as aides for the project or as speakers.

In the first week of the unit the teaching team met with the school board. They showed slides and explained the project, noting that it was to be a model for team teaching in the junior high school. The school board was very enthusiastic, gave the project and the teachers full support, and then said, "Just let us know when you are studying World War I and plan a war!"

Local newspapers, junior colleges, and other community organizations were also notified about the project. These community resources were used for student field experiences, resource speakers, and publicity.

STUDENT AND TEACHER INVOLVEMENT

The simulation *Dig* defines many varied roles for the students who take part. The Glen Ellyn team added two roles and assigned several students to each role suggested in the simulation so all students could play an integral part in the project. The most important role, throughout the simulation, was that of crew chief. Two students from each culture were chosen to fill this role and were called co-crew chiefs. Each crew chief had a detailed lesson plan and was able to plan activities ahead of schedule. They served as communicators between the teacher and the members of their culture, who worked as a team in planning their culture, designing, building, and burying their artifacts, and analyzing their dig.

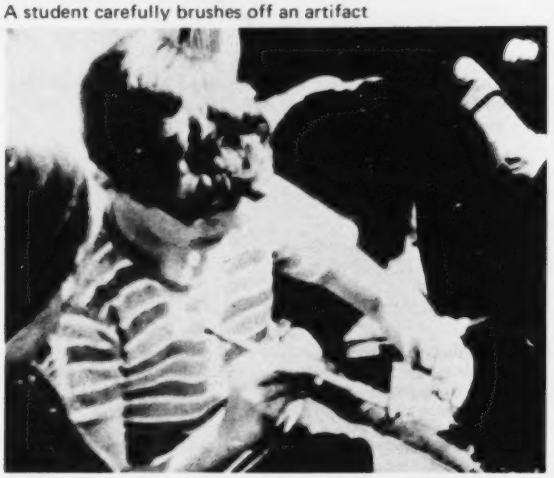
During the excavation, students assumed roles as diggers, measurers, recorders, loggers, washer-baggers, screeners, photographers, and guards. One exciting role, which all students wanted to assume during development of the cultures, was that of spy. Students could use any method they chose to spy, including walkie-talkies, tape recorders, or interrogating other spies. If a spy was caught, the teacher known as the GAB—Grand Arbiter of Behavior—decided on the punishment. "Student enthusiasm got a little out of hand, and it took a lot of self control on the part of the students and strong arms on the part of the GAB to protect any spies who were caught," said Child. "So we decided on the following spy rules."

1. No screaming "spy" out loud; only hold up a spy sign.
2. No one except the person who first catches a spy may touch him.
3. Teachers are excused from spying. They will not give away secrets.
4. No spying in math and science class.
5. No skipping classes to spy except with teacher's permission.

Teacher involvement, too, was at a high level. After all the initial planning that took place, they still spent about one hour a day planning for the following day. The four teachers had all 133 students in a four-hour block of time. This gave them a great deal of latitude in arranging the schedule. For example, they could spend four hours in one day working on artifacts with one culture. They were also able to spend three days outside planting and digging the artifacts without disrupting the rest of the school.

Work on decoding a culture's Rosetta stone

A student carefully brushes off an artifact



Success! A symbol of the culture is found

Cultures are displayed at the Museum Open House

For more information concerning the subject of this paper,

WRITE:

Mrs. Cherie Child
Glen Ellyn Junior High School
Glen Ellyn, Illinois 60137

for:
A complete description of the project including lesson plans, bibliography, audio-visual lists, and descriptions of all roles.

WRITE:
Interact Company
Box 262
Lakeside, California 92040

for:
The simulation game *Dig.* $10 includes teacher's guide, student manual, and copies of all sheets used in the game which can be reproduced.

WRITE:

Social Science Education Consortium, Inc.
855 Broadway
Boulder, Colorado 80302

for:
Learning With Games: An Analysis of Social Studies Educational Games and Simulations, edited by Cheryl Charles and Ronald Stadsklev.

A resource book which includes analyses of 70 popular games and simulations for use by elementary and secondary social studies teachers. Available March 1, 1973.

WRITE:

Simulation/Gaming/News
Stanford University
Box 8899
Stanford, California 94305

for:
Simulation/Gaming/News, a newsletter published five times a year. Subscription price is $3. Current information on games and simulations for classroom use as well as articles on the use of simulations as teaching tools.

ERIC DOCUMENTS

ED 059 621 – An Educational Theory Based on Game Theory: Preliminary Work - MF $.65, HC $3.29.

ED 062 303 – Simulation Gaming and Conventional Instruction: An Experimental Comparison - MF $.65, HC $3.29.

ED 063 191 – Social Studies Dawn: The Birth of Selected Civilizations - MF $.65, HC $3.29.

ED 064 863 – Models and Simulation: Some Definitions –Available from The Institute for the Future, Middletown, Connecticut 06457 - $2.

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EVALUATION

The teaching team evaluated students' creation of artifacts based on creativity and consistency with the cultural universals; analysis and confrontation between opposing cultures; and the basic, factual information gained by students in all four academic classes, e.g., the use of the datum stake in archaeology.

Students were asked to evaluate the dig and how it could be improved. Parents, too, were sent letters asking them to evaluate the dig from their point of view. Taking all the resulting evaluations, the teaching team modified the unit for use this year. The first major modification included extending the planning time, beginning in September rather than January. More time will also be allotted to making the artifacts. The artifacts will be buried in separate areas throughout the town rather than on school property, with math and geography concepts used to find the locations of the artifacts. Evaluation forms will be redesigned to test more closely the objectives of each of the subject areas.

TELLING THE STORY

The museum open house was planned to tell the rest of the school and the Glen Ellyn community about the dig. The team notes that publicity in the local newspapers as well as in the Chicago Tribune was very important. Students were very proud to have pictures and a description of their school activities in the newpaper.

Although arranging guest speakers, field trips, and awards took an enormous amount of time and energy on the part of the teaching team, they feel it was worth the effort. "When I saw the enthusiasm of those kids digging up pieces of plaster of paris, brushing them carefully with paint brushes, and whooping with delight when they figured out how to decipher a passage of hieroglyphic writing," Julie Leach said, "I was all ready to start the whole thing over again next week."

FOUR CULTURES

Prepared by 1971-72 8th Grade Team at Glen Ellyn Junior High School.

Flapisafers – Blue Culture

The Flapisafers believe in "youth over age." At the age of 25, members of the culture are banished. Children rule and marry early. An artifact reflecting this theme is a doll dressed in a bridal gown and veil. This culture has a written language, a number system, and artifacts to reflect each theme. The symbol of the culture is a diaper superimposed on a flower-strewn tombstone.

Rednudians – Red Culture

The Rednudians had as their theme "dark over light." They lived underground in a mountainous area. The people had small bodies, large hands and lungs. They had pink flourescent skin, and their green, cat-like eyes enabled them to see in the dark. They were vegetarians and spent their lives digging tunnels. They were not allowed above ground during the daylight hours or they would shrivel and die. The only day they could go above ground was during an eclipse. They worshipped darkness, and an eclipse covering the sun was their symbol. All of the artifacts reflect these ideas in the Rednudian society.

Settilligs – Green Culture

The Settilligs had the theme of "life over pollution." They lived under water in a trench in the South Pacific. They were amphibious and could live either in the water or in underwater domed cities. The people had both webbed hands and feet, and both gills and lungs. Their diet consisted of fish and seaweed. They spent their lives fighting pollution and trying to keep the sea clean. Their symbol was a picture of a live fish over a dead bird.

Anticholestrialites – Yellow Culture

The Anticholestrialites believed in "thin over fat." Their symbol was a tall, thin bird over a fat turtle. They lived in caves under Glenbard West Hill 10,000 years ago. The Anticholestrialites were vegetarians, but they killed animals for their skins and to use as fertilizer. Their caves had very narrow openings and were a gauge of thinness. Gaining weight meant banishment to the fat people who lived outside the caves. The chief was seven feet tall and weighed 100 pounds. Children enjoyed racing games and rack stretching to gain slimness. Brides received wedding rings which they wore on their thin wrists. Snakes were worshipped because of their thinness and were buried alive in the graves of the Anticholestrialites.